Mars Ascent Vehicle

Completed Technology Project (2015 - 2016)

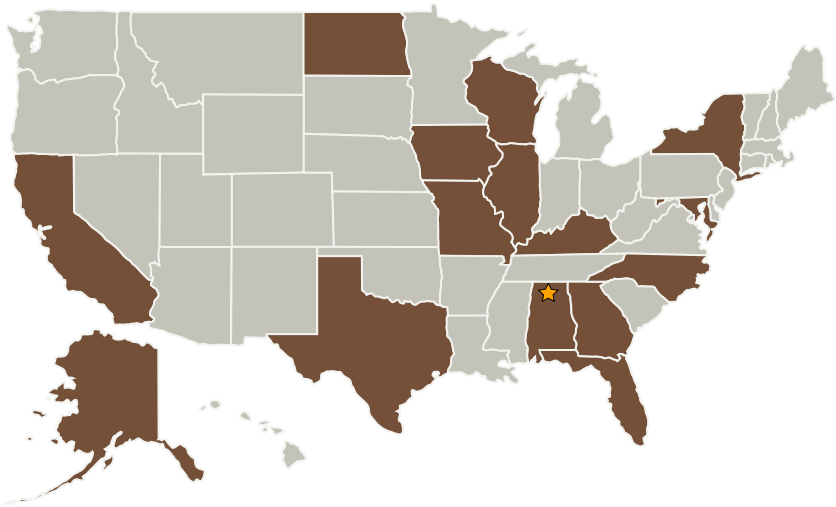
Project Introduction

The challenge provides opportunities to develop a wide range of innovative methods to insert the sample, provide sample containment, erect the launch vehicle and deploy the sample container with limited human intervention and validate a reliable methodology. This challenge especially seeks to engage the amateur robotics and rocketry communities to provide solutions.

Anticipated Benefits

The challenge is designed to demonstrate systems that autonomously can recover, load, and launch a "Mars sample" cache from the red planet surface to a pre-selected orbit, to eventually be returned to Earth for analysis. It provides opportunities to develop a wide range of innovative methods to insert the sample, provide sample containment, erect the launch vehicle and deploy the sample container with limited human intervention and validate a reliable methodology. This challenge especially seeks to engage the amateur robotics and rocketry communities to provide solutions.

Primary U.S. Work Locations and Key Partners



Mars Ascent Vehicle

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Prizes, Challenges, and Crowdsourcing

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Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
California Polytechnic State University-San Luis Obispo(Cal Poly)	Supporting Organization	Academia	San Luis Obispo, California
California State University-Chico	Supporting Organization	Academia	Chico, California
Cornell University	Supporting Organization	Academia	Ithaca, New York
Florida International University	Supporting Organization	Academia	Miami, Florida
Fresno Rocket Works	Supporting Organization	Industry	
Georgia Institute of Technology-Main Campus(GA Tech)	Supporting Organization	Academia	Atlanta, Georgia
Iowa State University	Supporting Organization	Academia	Ames, Iowa
Madison West High School	Supporting Organization	Academia	
North Carolina State University at Raleigh	Supporting Organization	Academia	Raleigh, North Carolina
Northeastern University(NEU)	Supporting Organization	Academia	Boston, Massachusetts
Saint Louis University	Supporting Organization	Academia	Saint Louis, Missouri

Continued on following page.

Project Management

Program Director:

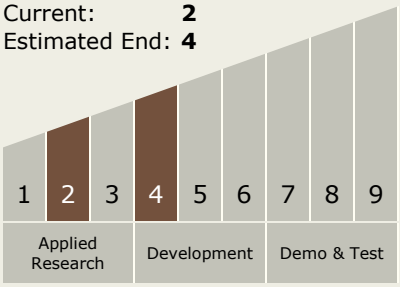
Amy P Kaminski

Program Manager:

Monserrate C Roman

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **4**



Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.3 Manipulation
    - TX04.3.4 Sample Acquisition and Handling

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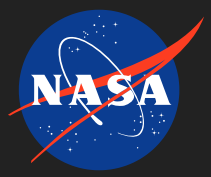
Organizations Performing Work	Role	Type	Location
Tarleton State University	Supporting Organization	Academia	Stephenville, Texas
United States Naval Academy	Supporting Organization	Academia	Chester, Maryland
University of Arkansas	Supporting Organization	Academia	Fayetteville, Arkansas
University of Central Florida(UCF)	Supporting Organization	Academia	Orlando, Florida
University of Iowa	Supporting Organization	Academia	Iowa City, Iowa
University of Louisville	Supporting Organization	Academia	Louisville, Kentucky
University of North Dakota(UND)	Supporting Organization	Academia	Grand Forks, North Dakota
University of South Florida-Main Campus(USF)	Supporting Organization	Academia	Tampa, Florida

Primary U.S. Work Locations	
Alabama	Alaska
California	Florida
Georgia	Illinois
Iowa	Kentucky
Maryland	Missouri
New York	North Carolina
North Dakota	Texas
Wisconsin	



Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html